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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	**Applicant(s)**
Office Action Summary	10/646,942	ISUMI ET AL.
	Examiner	**Art Unit**	
	Anthony Gutierrez	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _20 April 2007_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-38_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-38_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _21 August 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or
> described as set forth in section 102 of this title, if the differences between the subject matter
> sought to be patented and the prior art are such that the subject matter as a whole would
> have been obvious at the time the invention was made to a person having ordinary skill in the
> art to which said subject matter pertains. Patentability shall not be negatived by the manner
> in which the invention was made.

2.   Claims 1-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Keenan et al. (US 6,584,413 B1) in view of Lundstedt et al. (US 7,194,369 B2).

As to claim 1, Keenan et al. discloses a pass/fail judgment device comprising: a

discriminant function computing unit, (in the form of a histogram) for computing

discriminant functions which give variables used to separate the frequency distributions

of pass category and fail category from a plurality of pieces of parameter information

which make pass/fail judgment factors and pass/fail judgment result information

thereof (col. 1, line 54-col. 2, line 38, where the pass and fail categories are related to

the purity of a substance); a statistical parameter computing unit for computing the

center of distribution and distribution parameters indicating the breadth of the

distribution for said variables with respect to either or both of said pass category and fail

category (col. 9, lines 15 and 16, and col. 10, lines 1-16); a threshold determining unit for

determining a threshold for providing a pass/fail judgment based on the value of a

variable (col. 15, lines 33-45); a parameter information acquiring unit for acquiring a

plurality of pieces of parameter information on pass/fail judgment objects (col. 5, lines

55-65); and a pass/fail judging unit for comparing the value of said variable obtained

by substituting the parameter information into said discriminant function with said

threshold and thereby makes pass/fail judgment (col. 26, line 62-col. 27, line 34).

Keenan et al. discloses the threshold determining unit gives a specific distribution

probability weighting based on said center of distribution and distribution parameters

(col. 9, line 45 to col. 10, line 34) where the Poisson probability distribution is determined

based on a standard deviation equal to the square root of a mean value in order to

provide a weighting transformation that can detect contaminants, trace elements, or

subtle gradients in the composition that otherwise would not have been detected,

effectively allowing for less than pure amounts to be passed as pure amounts. Keenan

et al. further addresses that one aspect of weighting that as important is the treatment

of outliers (col. 10, lines 38-46).

Keenan et al. does not specifically disclose that the distribution probability is

based on at least one of a rate of flowout in the fail category, which represents a

number of pass/fail judgment objects contained in the fail category that are judged as

passed, and a rate of overcontrol in the pass category, which represents a number of

pass/fail judgment objects contained in the pass category that are judged as failed,

relative to said center of distribution and said distribution parameters.

Lundstedt et al., however, discloses processing by using multivariate calibration

models which can compensate for variations in material characteristics (Abstract) by

incorporating specific types of outlier information (col. 10, lines 1-45) including flowout

(which the Examiner maintains is equivalent to the outlier being a false positive

observation (col. 10, line 8) and overcontrol which the Examiner maintains is a valid

measurement which falls outside the range of primary or secondary variable spanned in the training set (col. 10, lines 30-33).

It therefore would have been obvious to one of ordinary skill in the art at the time of invention to, incorporate flowout and overcontrol conditions as related to outlier compensation, as taught by Lundstedt et al., in the outlier based weighting of Keenan et al. to more accurately judge the purity of the substance.

As to claim 2, Keenan et al. and Lundstedt et al. disclose everything as addressed above with respect to claim 1. In addition, Keenan et al. discloses that the statistical parameter computing unit computes the mean and standard deviation of fail category, and said threshold determining unit takes as said threshold said variable value equivalent to a value which is away from said mean of fail category by a constant multiple of the standard deviation thereof (col. 23, line 59- col. 24, line 9).

As to claim 3, Keenan et al. and Lundstedt et al. disclose everything as addressed above with respect to claim 2. In addition, Keenan et al. discloses that said statistical parameter computing unit computes the mean and standard deviation of said pass category, and said threshold determining unit judges by what multiple of the standard deviation the threshold determined by said mean and standard deviation of said fail category is away from said mean of said pass category (with respect to Least Squares, and thereby computes a rate of occurrence (with respect to the combination of references) of said overcontrol with that threshold (col. 15, lines 32-49).

As to claim 4, Keenan et al. and Lundstedt et al. disclose everything claimed as applied above with respect to claim 1. In addition, Keenan et al. discloses converting specified inspection data obtained as the result of inspecting a plurality of pass/fail

judgment objects with a specified inspecting instrument in advance into parameters which represent different pass/fail judgment factors by a plurality of different conversion expressions, and is stored in a specified storage medium (including a hard drive), and a plurality of pieces of parameter information on pass/fail judgment objects acquired by said parameter information acquiring unit and the results of pass/fail judgment by said pass/fail judging unit are additionally stored in the specified storage medium (col. 6, lines 11-40).

As to claim 5, Keenan et al. and Lundstedt et al. disclose everything claimed as applied above with respect to claim 4. In addition, Keenan et al. discloses the judgment device comprises a unit for inputting the results of visual pass/fail judgment on said pass/fail judgment objects, said pass/fail judgment result information indicating the results of said `visual pass/fail judgment is correlated with the parameter information on said pass/fail judgment objects, and if the results of pass/fail judgment by said pass/fail judging unit and the results of said visual pass/fail judgment are different from each other, the results of the visual pass/fail judgment are additionally stored as correct judgment results in said specified storage medium (col. 6, lines 11-40).

As to claim 6, Keenan et al. and Lundstedt et al. disclose everything claimed as applied above with respect to claim 5. In addition, Keenan et al. discloses the judgment device comprises a unit for inputting the causes for visual pass/fail judgment and the results of the visual pass/fail judgment on said pass/fail judgment objects, either or both of said pass category and fail category are subdivided by cause for the pass/fail judgment and taken as said pass/fail judgment result information, and said discriminant function computing unit computes discriminant functions which give

variables which separate the frequency distributions of the subdivided pass category and fail category (col. 6, lines 11-40).

As to claims 7, Keenan et al. and Lundstedt et al. disclose everything claimed as applied above with respect to claim 1. In addition, Keenan et al. discloses that computing discriminant functions having as a variable any of a plurality of said parameters, the discriminant function computing unit computes correlation coefficients between the parameters, counts the number of parameters which give a correlation coefficient not less than a predetermined value in said pass category and fail category, disuses parameters having a high count, and repeats this processing to eliminate multicolinearity (col. 12, lines 24-38 and col. 20, line 53- col. 21, line 3).

As to claim 8, Keenan et al. and Lundstedt et al. disclose everything claimed as applied above with respect to claim 1. In addition, Keenan et al. discloses in computing discriminant functions having as a variable any of a plurality of said parameters, said discriminant function computing unit disuses parameters in increasing order of priorities given to the parameters in advance, and repeats this processing to eliminate multicolinearity (col. 12, lines 24-38 and col. 20, line 53- col. 21, line 3).

As to claim 9, Keenan et al. and Lundstedt et al. disclose everything claimed as applied above with respect to claim 1. In addition, Keenan et al. discloses that the judgment device comprises: an electromagnetic wave applying unit for irradiating pass/fail judgment objects with predetermined electromagnetic waves (col. 1, line 54- col. 2, line 38, where the pass and fail categories are related to the purity of a substance); an electromagnetic wave detecting unit for detecting reflected electromagnetic waves or transmitted electromagnetic waves produced as the result

of the application of the electromagnetic waves (col. 3, lines 25-29); and an

electromagnetic wave data generating unit for generating electromagnetic wave

data from the detection values of reflected electromagnetic waves or transmitted

electromagnetic waves detected by the electromagnetic wave detecting unit (col. 5,

lines 55-65), and said discriminant function computing unit and said parameter

information acquiring unit substitute said electromagnetic wave data into a plurality of

different conversion expressions to compute values corresponding to the forms of

pass/fail judgment objects, and take the computed values as a plurality of pieces of

said parameter information (col. 26, line 62-col. 27, line 34)

As to claim 10, Keenan et al. and Lundstedt et al. disclose everything claimed as

applied above with respect to claim 9. In addition, Keenan et al. discloses that the

judgment device comprises: a positional information acquiring unit for acquiring

positional information on pass/fail judgment objects waves; and an arrangement

analyzing unit for, when electromagnetic waves reflected by a plurality of pass/fail

judgment objects more than once are detected by said electromagnetic wave

detecting unit (col. 1, line 54-col. 2, line 38, where the pass and fail categories are

related to the purity of a substance), grasping the arrangement of the pass/fail

judgment objects from said positional information, and said discriminant function

computing unit disuses or gives lower priorities to said parameters to which said

electromagnetic waves reflected more than once greatly contribute. (col. 26, line 62-

col. 27, line 34).

As to claim 11, Keenan et al. discloses a pass/fail judgment method comprising:

computing discriminant functions (in the form of a histogram) which give variables

which separate the frequency distributions of pass category and fail category from a plurality of pieces of parameter information which make pass/fail judgment factors and pass/fail judgment result information thereof (col. 1, line 54-col. 2, line 38, where the pass and fail categories are related to the purity of a substance); computing a center of distribution and distribution parameters indicating the breadth of the distribution for said variables with respect to either or both of said pass category and fail category (col. 9, lines 15 and 16, and col. 10, lines 1-16); determining a threshold for providing a pass/fail judgment based on the value of a variable (col. 15, lines 33-45); acquiring a plurality of pieces of parameter information on pass/fail judgment objects (col. 5, lines 55-65); and comparing the value variables obtained by substituting the parameter information into said discriminant function with said threshold and displaying a pass/fail judgment for the one or more pass/fail judgment objects based on the comparing step(col. 26, line 62-col. 27, line 34).

Keenan et al. discloses a threshold determining unit that gives a specific distribution probability weighting based on said center of distribution and distribution parameters (col. 9, line 45 to col. 10, line 34) where the Poisson probability distribution is determined based on a standard deviation equal to the square root of a mean value in order to provide a weighting transformation that can detect contaminants, trace elements, or subtle gradients in the composition that otherwise would not have been detected, effectively allowing for less than pure amounts to be passed as pure amounts. Keenan et al. further addresses that one aspect of weighting that as important is the treatment of outliers (col. 10, lines 38-46).

Keenan et al. does not specifically disclose that the distribution probability is based on at least one of a rate of flowout in the fail category, which represents a number of pass/fail judgment objects contained in the fail category that are judged as passed, and a rate of overcontrol in the pass category, which represents a number of pass/fail judgment objects contained in the pass category that are judged as failed, relative to said center of distribution and said distribution parameters.

Lundstedt et al., however, discloses processing by using multivariate calibration models which can compensate for variations in material characteristics (Abstract) by incorporating specific types of outlier information (col. 10, lines 1-45) including flowout (which the Examiner maintains is equivalent to the outlier being a false positive observation (col. 10, line 8) and overcontrol which the Examiner maintains is a valid measurement which falls outside the range of primary or secondary variable spanned in the training set (col. 10, lines 30-33).

It therefore would have been obvious to one of ordinary skill in the art at the time of invention to, incorporate flowout and overcontrol conditions as related to outlier compensation, as taught by Lundstedt et al., in the outlier based weighting of Keenan et al. to more accurately judge the purity of the substance.

As to claim 12, Keenan et al. discloses a pass/fail judgment method comprising: a discriminant function computing step, (in the form of use of a histogram) in which discriminant functions which give variables which separate the frequency distributions of pass category and fail category from a plurality of pieces of parameter information which make pass/fail judgment factors and pass/fail judgment result information thereof (col. 1, line 54-col. 2, line 38, where the pass and fail categories are related to

the purity of a substance); a statistical parameter computing step in which a center of

distribution and distribution parameters indicating a breadth of the distribution for said

variables are computed with respect to either or both of said pass category and fail

category (col. 9, lines 15 and 16, and col. 10, lines 1-16); a threshold determining step

for determining a threshold for providing a pass/fail judgment based on the value of a

variable (col. 15, lines 33-45); a parameter information acquiring step in which a

plurality of pieces of said parameter information on one or more pass/fail judgment

objects are acquired (col. 5, lines 55-65); and a pass/fail judging step in which the

value of variables obtained by substituting the parameter information into said

discriminant function are compared with said threshold and thereby makes pass/fail

judgment for the one or more pass/fail judgment objects is displayed based on the

comparison with said threshold (col. 26, line 62-col. 27, line 34).

Keenan et al. discloses a threshold determining unit that gives a specific

distribution probability weighting based on said center of distribution and distribution

parameters (col. 9, line 45 to col. 10, line 34) where the Poisson probability distribution is

determined based on a standard deviation equal to the square root of a mean value

in order to provide a weighting transformation that can detect contaminants, trace

elements, or subtle gradients in the composition that otherwise would not have been

detected, effectively allowing for less than pure amounts to be passed as pure

amounts. Keenan et al. further addresses that one aspect of weighting that as

important is the treatment of outliers (col. 10, lines 38-46).

Keenan et al. does not specifically disclose that the distribution probability is

based on at least one of a rate of flowout in the fail category, which represents a

number of pass/fail judgment objects contained in the fail category that are judged as

passed, and a rate of overcontrol in the pass category, which represents a number of

pass/fail judgment objects contained in the pass category that are judged as failed,

relative to said center of distribution and said distribution parameters.

Lundstedt et al., however, discloses processing by using multivariate calibration

models which can compensate for variations in material characteristics (Abstract) by

incorporating specific types of outlier information (col. 10, lines 1-45) including flowout

(which the Examiner maintains is equivalent to the outlier being a false positive

observation (col. 10, line 8) and overcontrol which the Examiner maintains is a valid

measurement which falls outside the range of primary or secondary variable spanned

in the training set (col. 10, lines 30-33).

It therefore would have been obvious to one of ordinary skill in the art at the time

of invention to, incorporate flowout and overcontrol conditions as related to outlier

compensation, as taught by Lundstedt et al., in the outlier based weighting of Keenan

et al. to more accurately judge the purity of the substance.

As to claim 13, Keenan et al. discloses a multivariate statistics analyzer which is

capable of communication of data with the outside through a communication

interface and executes a multivariate analysis program under the control of a

predetermined operating system, wherein said multivariate statistics analyzer comprises

a hard disk drive which is capable of accumulating the multivariate analysis program

and transmitting, receiving, and accumulating data (col. 6, lines 11-40), said

multivariate analysis program comprises modules corresponding to a mode classifying

portion which includes parameter value data consisting of parameter values which are

correlated with at least pass/fail judgment result data of one or more pass/fail

judgment objects when the data is externally acquired through said communication

interface and stored in said hard disk drive and are actually computed with respect to

each component, and subdivides categories based on the accumulated data(col. 5,

lines 55-65 and col. 26, line 62-col. 27, line 34); a discriminant function computing

portion (in the form of a histogram) which eliminates multicolinearity and further

computes discriminant functions based on said parameter value data(col. 1, line 54-

col. 2, line 38, where the pass and fail categories are related to the purity of a

substance); a statistical parameter computing portion which computes a center of

distribution parameters and including a breadth of a distribution for variables with

respect to either or both of a pass category and a fail category, and the mean and

standard deviation in the frequency distributions of said pass category and said fail

category with respect to said discriminant functions (col. 9, lines 15 and 16, and col. 10,

lines 1-16); and a threshold determining portion for determining a threshold for

providing a pass/fail judgment based on the value of a variable defined by a specific

distribution probability (col. 15, lines 33-45), the threshold determining portion further

performs the operations of acquiring said discriminant function data, said parameter

value data and pass/fail judgment result data (col. 5, lines 55-65); generating a

histogram corresponding to a pass/fail judgment result on a category-by-category

basis (col. 2, lines 18- 38), computing a mean and a standard deviation of each

category in the generated histograms, and determining the threshold of a discriminant

function corresponding to a specified rate and a pass/fail judgment display portion

configured to display a pass/fail judgment for the one or more pass/fail judgment

objects based on the threshold determined by the threshold determining portion(col. 26, line 61-col. 27, line 34).

Keenan et al. discloses the threshold determining unit gives a specific distribution probability weighting based on said center of distribution and distribution parameters (col. 9, line 45 to col. 10, line 34) where the Poisson probability distribution is determined based on a standard deviation equal to the square root of a mean value in order to provide a weighting transformation that can detect contaminants, trace elements, or subtle gradients in the composition that otherwise would not have been detected, effectively allowing for less than pure amounts to be passed as pure amounts. Keenan et al. further addresses that one aspect of weighting that as important is the treatment of outliers (col. 10, lines 38-46).

Keenan et al. does not specifically disclose that the distribution probability is based on at least one of a rate of flowout in the fail category which represents a number of pass/fail judgment objects that should be classified in the fail category, but are actually judged as being classified in the pass category, and a rate of overcontrol in the pass category, which represents a number of pass/fail judgment objects contained in the pass category that are judged as failed, relative to said center of distribution and said distribution parameters.

Lundstedt et al., however, discloses processing by using multivariate calibration models which can compensate for variations in material characteristics (Abstract) by incorporating specific types of outlier information (col. 10, lines 1-45) including flowout (which the Examiner maintains is equivalent to the outlier being a false positive observation (col. 10, line 8) and overcontrol which the Examiner maintains is a valid

measurement which falls outside the range of primary or secondary variable spanned in the training set (col. 10, lines 30-33).

It therefore would have been obvious to one of ordinary skill in the art at the time of invention to, incorporate flowout and overcontrol conditions as related to outlier compensation, as taught by Lundstedt et al., in the outlier based weighting of Keenan et al. to more accurately judge the purity of the substance.

As to claim 14, Keenan et al. and Lundstedt et al. disclose everything claimed as applied above with respect to claim 13. In addition, Keenan et al. discloses that said threshold determining portion is externally fed with said rate of flowout and determines the threshold of said discriminant function so that the inputted rate of flowout will be obtained (col. 15, lines 32-49).

As to claim 15, Keenan et al. and Lundstedt et al. disclose everything claimed as applied above with respect to claim 14. In addition, Keenan et al. discloses said threshold determining portion determines as a threshold the range from the mean to four times the standard deviation which is considered to be the range corresponding to said rate of flowout (col. 15, lines 32-49).

As to claim 16, Keenan et al. and Lundstedt et al. disclose everything claimed as applied above with respect to claim 13. In addition, Keenan et al. discloses said threshold determining portion judges the suitability of said determined threshold of discriminant function based on the mean and standard deviation computed in a pass category and said specified rate of overcontrol which is set for said pass category and indicates the range in which non-defective units are judged as defective units (col. 15, lines 32-49).

As to claim 17, Keenan et al. and Lundstedt et al. disclose everything claimed as applied above with respect to claim 16. In addition, Keenan et al. discloses aid threshold determining portion judges the suitability of said threshold depending on whether the threshold falls in the range from the mean to nine times the standard deviation which is considered to be the range corresponding to said rate of overcontrol) (col. 15, lines 32-49).

As to claim 18, Keenan et al. discloses a quality control apparatus comprising (See Fig. 10 and related discussion beginning col. 19, line 52): a statistical computing unit configured to receive object data representing one or more characteristics of an object and compute at least one of a first probability that the object will be classified in a first category and a second probability that the object will be classified in a second category based on the received object data (28) (See also col. 1, line 54-col. 2, line 38, where the pass and fail categories are related to the purity of a substance and in which a discriminate function is disclosed as calculated to discriminate between one or more objects classified in the first category from one or more objects classified in the second category); an input unit (30); a calculation unit (34); a judging unit configured to determine whether one or more objects should be classified in one of the first and second categories based on the discriminate function calculated by the calculation unit (43); and a communication unit configured to communicate whether the object is classified in one of the first and second categories based on the determination of the judging unit (49).

Keenan et al. discloses the threshold determining unit gives a specific distribution probability weighting based on said center of distribution and distribution parameters

(col. 9, line 45 to col. 10, line 34) where the Poisson probability distribution is determined based on a standard deviation equal to the square root of a mean value in order to provide a weighting transformation that can detect contaminants, trace elements, or subtle gradients in the composition that otherwise would not have been detected, effectively allowing for less than pure amounts to be passed as pure amounts. Keenan et al. further addresses that one aspect of weighting that as important is the treatment of outliers (col. 10, lines 38-46).

Keenan et al. does not specifically disclose for the input or calculation units that the discriminant function is calculated based on the at least one of the rate of flowout in the second category which represents a number of objects that should be classified in the second category that are actually judged as being classified in the first category, and the rate of overcontrol in the first category which represents a number of objects that should be classified in the first category that are actually judged as being classified in the second category, received by the input unit and based on at least one of the first and second probabilities computed by the statistical computing unit.

Lundstedt et al., however, discloses processing by using multivariate calibration models which can compensate for variations in material characteristics (Abstract) by incorporating specific types of outlier information (col. 10, lines 1-45) including flowout (which the Examiner maintains is equivalent to the outlier being a false positive observation (col. 10, line 8) and overcontrol which the Examiner maintains is a valid measurement which falls outside the range of primary or secondary variable spanned in the training set (col. 10, lines 30-33).

It therefore would have been obvious to one of ordinary skill in the art at the time of invention to, incorporate flowout and overcontrol conditions as related to outlier compensation, as taught by Lundstedt et al., in the outlier based weighting of Keenan et al. to more accurately judge the purity of the substance.

As to claim 19, Keenan et al. and Lundstedt et al. disclose everything as addressed above with respect to claim 18, and furthermore Keenan et al. discloses that the one or more characteristics of the object include label data (atomic structure) and form data (molecular structure) (col. 2, lines 39-41).

As to claim 20, Keenan et al. and Lundstedt et al. disclose everything as addressed above with respect to claim 18, and furthermore Keenan et al. discloses that the first category comprises a pass category, which represents a group of one or more objects that satisfy a predetermined criteria, and the second category comprises a fail category, which represents another group of one or more objects that do not satisfy the predetermined criteria (col. 15, lines 33-48).

As to claim 21, Keenan et al. and Lundstedt et al. disclose everything as addressed above with respect to claim 18, and furthermore Keenan et al. discloses that the first category comprises a group of one or more objects that have a higher degree of quality than another group of one or more objects in the second category (col. 15, lines 33-45).

As to claim 22, Keenan et al. and Lundstedt et al. disclose everything as addressed above with respect to claim 18, and furthermore Keenan et al. discloses that comprising a detector (implied by the S/N criteria) configured to detect physical

characteristics of the object and communicate the detected physical characteristics

of the object to the statistical computing unit (col. 15, lines 33-45).

As to claim 23, Keenan et al. and Lundstedt et al. disclose everything as

addressed above with respect to claim 22, and furthermore Keenan et al. discloses

that the detected physical characteristics of the object include an orientation of one

component of the object relative to another component of the object (col. 21, lines 4-

20).

As to claim 24, Keenan et al. and Lundstedt et al. disclose everything as

addressed above with respect to claim 22, and furthermore Keenan et al. implies that

the detector comprises a laser inspecting instrument by teaching that the method is

implemented using spectral analysis in any available electromagnetic range including

the use of photon emission of radiation in the ultraviolet, infrared and X-ray wavelengths

(col. 3, lines 25-29).

As to claim 25, Keenan et al. and Lundstedt et al. disclose everything as

addressed above with respect to claim 18, and furthermore Keenan et al. discloses

(with respect to the combination of references) that the at least one of the rate of

flowout and the rate of overcontrol comprises a visual observation by an operator of an

actual orientation of one component of the object relative to another component of

the object (col. 24, lines 40-58).

As to claim 26, Keenan et al. and Lundstedt et al. disclose everything as

addressed above with respect to claim 25, and furthermore Keenan et al. discloses

that the visual observation by the operator occurs after the statistical computing unit

has computed at least one of the first and second probabilities (col. 24, lines 59-64).

As to claim 27, Keenan et al. and Lundstedt et al. disclose everything as addressed above with respect to claim 18, and furthermore Keenan et al. discloses that the discriminate function is different from a midpoint between a mean value of a first probability distribution and a mean value of a second probability distribution (col. 9, line 45 to col. 10, line 34, where the Poisson probability distribution is determined based on a standard deviation equal to the square root of a mean value in order to provide a weighting transformation that can detect contaminants, trace elements, or subtle gradients in the composition that otherwise would not have been detected, effectively allowing for less than pure amounts to be passed as pure amounts).

As to claim 28, Keenan et al. and Lundstedt et al. disclose everything as addressed above with respect to claim 18, and furthermore Keenan et al. discloses that the communication unit comprises a display unit arranged to provide a visual representation of whether the object is classified in one of the first and second categories based on the determination of the judging unit (col. 20, lines 29-35 regarding element 49).

As to claim 29, Keenan et al. discloses a computer-implemented quality control method (See Fig. 10 and related discussion beginning col. 19, line 52)comprising: receiving object data representing one or more physical characteristics of an object; computing a first probability distribution, which represents a probability that one or more objects should be classified in a first category, based on the received object data and computing a second probability distribution, which represents a probability that one or more objects should be classified in a second category, based on the received object data (discussion related to element 28) (See also col. 1, line 54-col. 2, line 38,

where the pass and fail categories are related to the purity of a substance and in which

a discriminate function is disclosed as calculated to discriminate between one or more

objects classified in the first category from one or more objects classified in the second

category); determining whether one or more objects should be classified in one of the

first and second categories based on the discriminate function calculated by the

calculation unit (discussion related to element 43); and communicating the

determination of whether the one or more objects are classified in one of the first and

second categories to an operator (discussion related to elements 49 and 51).

Keenan et al. discloses calculating a discriminate function to discriminate

between one or more objects that should classified in the first category from one or

more objects that should be classified in the second category based on the first and

second probability distributions computed by the statistical computing unit by

disclosing that a threshold determining unit gives a specific distribution probability

weighting based on said center of distribution and distribution parameters (col. 9, line

45 to col. 10, line 34) where the Poisson probability distribution is determined based on a

standard deviation equal to the square root of a mean value in order to provide a

weighting transformation that can detect contaminants, trace elements, or subtle

gradients in the composition that otherwise would not have been detected, effectively

allowing for less than pure amounts to be passed as pure amounts. Keenan et al.

further addresses that one aspect of weighting that as important is the treatment of

outliers (col. 10, lines 38-46).

Keenan et al. does not specifically disclose receiving an rate of flowout in the second category, which represents a number of objects that should be classified in the second category, but are actually judged as being classified in the first category; receiving an rate of overcontrol in the first category representing a number of objects that should be classified in the first category, but are actually judged as being classified in the second category to base the calculation of the discriminant function.

Lundstedt et al., however, discloses processing by using multivariate calibration models which can compensate for variations in material characteristics (Abstract) by incorporating specific types of outlier information (col. 10, lines 1-45) including flowout (which the Examiner maintains is equivalent to the outlier being a false positive observation (col. 10, line 8) and overcontrol which the Examiner maintains is a valid measurement which falls outside the range of primary or secondary variable spanned in the training set (col. 10, lines 30-33).

It therefore would have been obvious to one of ordinary skill in the art at the time of invention to, incorporate flowout and overcontrol conditions as related to outlier compensation, as taught by Lundstedt et al., in the outlier based weighting of Keenan et al. to more accurately judge the purity of the substance.

As to claim 30, Keenan et al. and Lundstedt et al. disclose everything as addressed above with respect to claim 29, and furthermore Keenan et al. discloses that the one or more physical characteristics of the object include label data (atomic structure) and form data (molecular structure) representing one or more structural features of the object (col. 2, lines 39-41).

As to claim 31, Keenan et al. and Lundstedt et al. disclose everything as addressed above with respect to claim 29, and furthermore Keenan et al. discloses that the first category comprises a pass category, which represents a group of one or more objects that satisfy a predetermined criteria, and the second category comprises a fail category, which represents another group of one or more objects that do not satisfy the predetermined criteria (col. 15, lines 33-48).

As to claim 32, Keenan et al. and Lundstedt et al. disclose everything as addressed above with respect to claim 29, and furthermore Keenan et al. discloses that the first category comprises a group of one or more objects that have a higher degree of quality than another group of one or more objects of the second category (col. 15, lines 33-45).

As to claim 33, Keenan et al. and Lundstedt et al. disclose everything as addressed above with respect to claim 29, and furthermore Keenan et al. discloses detecting physical characteristics of the object and communicating the detected physical characteristics of the object to the statistical computing unit (col. 15, lines 33-45).

As to claim 34, Keenan et al. and Lundstedt et al. disclose everything as addressed above with respect to claim 33, and furthermore Keenan et al. discloses that the detected physical characteristics of the object include an orientation of one component of the object relative to another component of the object (col. 21, lines 4-20).

As to claim 35, Keenan et al. and Lundstedt et al. disclose everything as addressed above with respect to claim 29, and furthermore Keenan et al. discloses

(with respect to the combination of references) that the received rate of flowout and the received rate of overcontrol comprise a visual observation by the operator of an actual orientation of one component of the object relative to another component of the object (col. 24, lines 40-58).

As to claim 36, Keenan et al. and Lundstedt et al. disclose everything as addressed above with respect to claim 29, and furthermore Keenan et al. discloses that the discriminate function is different from a midpoint between a mean value of the first probability distribution and a mean value of the second probability distribution (col. 9, line 45 to col. 10, line 34, where the Poisson probability distribution is determined based on a standard deviation equal to the square root of a mean value in order to provide a weighting transformation that can detect contaminants, trace elements, or subtle gradients in the composition that otherwise would not have been detected, effectively allowing for less than pure amounts to be passed as pure amounts).

As to claim 37, Keenan et al. discloses a computer-implemented quality control apparatus (See Fig. 10 and related discussion beginning col. 19, line 52)comprising: a detector (implied by the S/N criteria) configured to detect physical characteristics of an object and generate object data representing the detected physical characteristics of the object (col. 15, lines 33-45); a statistical computing unit configured to compute a non-defective object probability distribution representing a probability that one or more objects should be classified in a non-defective category based on the object data generated by the detector and compute a defective object probability distribution representing a probability that one or more objects should be classified in a defective category based on the object data generated by the detector (28) (See

also col. 1, line 54-col. 2, line 38, where the defectiveness of categories is related to the

purity of a substance and in which a discriminate function is disclosed as calculated to

discriminate between one or more objects classified in the first category from one or

more objects classified in the second category), classify the one or more objects as

being in the non-defective category based on a match between a first pattern of

object data and the computed non-defective object probability distribution, and

classify the one or more objects as being in the defective category based on a match

between a second pattern of object data and the computed defective object

probability distribution (Keenan et al. discloses calculating a discriminate function to

discriminate between one or more objects that should classified in the first category

from one or more objects that should be classified in the second category based on

the first and second probability distributions computed by the statistical computing unit

by disclosing that a threshold determining unit gives a specific distribution probability

weighting based on said center of distribution and distribution parameters (col. 9, line

45 to col. 10, line 34) where the Poisson probability distribution is determined based on a

standard deviation equal to the square root of a mean value in order to provide a

weighting transformation that can detect contaminants, trace elements, or subtle

gradients in the composition that otherwise would not have been detected, effectively

allowing for less than pure amounts to be passed as pure amounts); an input unit (30)

including a visual observation by an operator of an actual orientation of one

component of the object relative to another component of the object (col. 21, lines 4-

20 and col. 24, lines 40-58); a calculation unit configured to calculate a discriminate

function to discriminate between defective and non-defective objects based on the

non-defective category and defective object probability distributions computed by the

statistical computing unit and based on the feedback data received by the input unit

(34), the discriminate function being different from a midpoint between a mean value

of the first probability distribution and a mean value of the second probability

distribution (col. 9, line 45 to col. 10, line 34); a judging unit configured to determine

whether the one or more objects should be classified in one of the defective or non-

defective categories based on the discriminate function calculated by the calculation

unit (43); and a display unit configured to display whether the one or more objects are

classified in one of the defective or non-defective categories based on the

determination of the judging unit (49). Keenan et al. further addresses that one aspect

of weighting that as important is the treatment of outliers (col. 10, lines 38-46).

Keenan et al. does not specifically disclose the units configured to receive a rate

of flowout in the defective category, which represents a number of objects that should

be classified in the defective category by the statistical computing unit, but are

actually judged as being classified in the non-defective category, and a rate of

overcontrol in the non-defective category, which represents a number of objects that

should be classified in the non-defective category by the statistical computing unit, but

are actually judged as being classified in the defective category, the received rate of

flowout and the received rate of overcontrol.

Lundstedt et al., however, discloses processing by using multivariate calibration

models which can compensate for variations in material characteristics (Abstract) by

incorporating specific types of outlier information (col. 10, lines 1-45) including flowout

(which the Examiner maintains is equivalent to the outlier being a false positive

observation (col. 10, line 8) and overcontrol which the Examiner maintains is a valid

measurement which falls outside the range of primary or secondary variable spanned

in the training set (col. 10, lines 30-33).

It therefore would have been obvious to one of ordinary skill in the art at the time

of invention to, incorporate flowout and overcontrol conditions as related to outlier

compensation, as taught by Lundstedt et al., in the outlier based weighting of Keenan

et al. to more accurately judge the purity of the substance.

As to claim 38, Keenan et al. discloses a computer-implemented quality control

method comprising (See Fig. 10 and related discussion beginning col. 19, line 52):

detecting physical characteristics of an object and generating object data

representing the detected physical characteristics of the object (col. 15, lines 33-45);

computing a non-defective object probability distribution representing a probability

that one or more objects should be classified in a non-defective category based on the

generated object data (discussion of 28) (See also col. 1, line 54-col. 2, line 38, where

the defectiveness of categories is related to the purity of a substance and in which a

discriminate function is disclosed as calculated to discriminate between one or more

objects classified in the first category from one or more objects classified in the second

category); computing a defective object probability distribution representing a

probability that one or more objects should be classified in a defective category based

on the generated object data; classifying the one or more objects as being in the non-

defective category based on a match between a first pattern of object data and the

computed non-defective object probability distribution; classifying the one or more

objects as being in the defective category based on a match between a second

pattern of object data and the computed defective object probability distribution

(Keenan et al. discloses calculating a discriminate function to discriminate between

one or more objects that should classified in the first category from one or more objects

that should be classified in the second category based on the first and second

probability distributions computed by the statistical computing unit by disclosing that a

threshold determining unit gives a specific distribution probability weighting based on

said center of distribution and distribution parameters (col. 9, line 45 to col. 10, line 34)

where the Poisson probability distribution is determined based on a standard deviation

equal to the square root of a mean value in order to provide a weighting

transformation that can detect contaminants, trace elements, or subtle gradients in the

composition that otherwise would not have been detected, effectively allowing for less

than pure amounts to be passed as pure amounts); calculating a discriminate function

to discriminate between one or more objects classified in the non-defective category

from one or more objects classified in the defective category, the discriminate function

being different from a midpoint between a mean value of the computed non-

defective object probability distribution and a mean value of the computed defective

object probability distribution (col. 9, line 45 to col. 10, line 34); determining whether one

or more objects should be classified in one of the defective or non-defective categories

based on the calculated discriminate function (discussion of 43); and displaying an

image that illustrates whether the one or more objects are classified in one of the

defective or non-defective categories based on the determining step (discussion of 49).

Keenan et al. further addresses including a visual observation by an operator of an

actual orientation of one component of the object relative to another component of

the object (col. 21, lines 4-20 and col. 24, lines 40-58) and that one aspect of weighting

that as important is the treatment of outliers (col. 10, lines 38-46).

Keenan et al. does not specifically disclose receiving an rate of flowout in the

defective category, which represents a number of objects that should be classified in

the defective category, but are actually judged as being classified in the non-

defective category; and receiving an rate of overcontrol in the non-defective

category, which represents a number of objects that should be classified in the non-

defective category, but are actually judged as being classified in the defective

category.

Lundstedt et al., however, discloses processing by using multivariate calibration

models which can compensate for variations in material characteristics (Abstract) by

incorporating specific types of outlier information (col. 10, lines 1-45) including flowout

(which the Examiner maintains is equivalent to the outlier being a false positive

observation (col. 10, line 8) and overcontrol which the Examiner maintains is a valid

measurement which falls outside the range of primary or secondary variable spanned

in the training set (col. 10, lines 30-33).

It therefore would have been obvious to one of ordinary skill in the art at the time

of invention to, incorporate flowout and overcontrol conditions as related to outlier

compensation, as taught by Lundstedt et al., in the outlier based weighting of Keenan

et al. to more accurately judge the purity of the substance.

Response to Arguments

3.   Applicant's arguments with respect to claims 1-38 have been considered but are

moot in view of the new ground(s) of rejection.

Conclusion

4.   Applicant's amendment necessitated the new ground(s) of rejection presented

in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed

until after the end of the THREE-MONTH shortened statutory period, then the shortened

statutory period will expire on the date the advisory action is mailed, and any extension

fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory

action. In no event, however, will the statutory period for reply expire later than SIX

MONTHS from the date of this final action.

5.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Anthony Gutierrez whose telephone number is (571)

272-2215. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Eliseo Ramos-Feliciano can be reached on (571) 272-7925. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A.G   8/6/07

Anthony Gutierrez

Art Unit 2857

8/6/07

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